



## Original communication

## Human fatalities from wild elephant attacks - A study of fourteen cases

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## ARTICLE INFO

## Article history:

Received 10 December 2010

Received in revised form

21 January 2011

Accepted 26 January 2011

Available online 22 February 2011

## Keywords:

Human–wild elephant conflict

Trampling

Tusker bull

## ABSTRACT

Human–wild elephant conflicts are frequently reported from various parts of the country. Encroaching of animal habitat by human civilization is a primary reason for this. The present study comprises of fourteen autopsy cases conducted at the department of Forensic Medicine, B.S Medical College, Bankura, West Bengal, India over a period of three years. The study attempts to find out the nature of injuries caused by wild elephant attack and the common factors contributing to human–wild elephant conflict so that vulnerable population can be cautioned to avoid conflicts. A distinct seasonal as well as diurnal variation of attack incidences was noted. Attacks were sudden and unprovoked. Killer elephants were wild tuskers in all the cases. Victims were from the low socioeconomic group and the cause of death was due to trampling on the vital organs like chest and head.

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## 1. Introduction

Population explosion and advancing civilization rapidly increases the demand for more and more land for agriculture and industry. Fast receding trees, shrinking and fragmenting wild animal habitat are forcing the wild animals, specially the elephant, close to the human population thus increasing the incidences of human–wild animal conflict. Elephants have gradually been confined to so called ‘pocketed herds’ in small patches of forest in areas dominated by man. Such ‘pocketed herds’ represent an extreme stage in the human–elephant conflict. In eastern region of India this phenomenon makes the wild elephants almost a regular invader into farm fields and dwelling places resulting in many human fatalities. Elephant biology also attributes to its periodical aggressive behavior leading to conflict and human fatalities. Occupation at times is found responsible for death of persons from conflict with wild animals.<sup>1</sup> Ecotourism and jungle safari may also sometimes expose people to wild elephants with fatal outcome.<sup>2,3</sup>

Different types of animal related injuries in different circumstances including some wild animal related injuries are reported in different medical and other literatures.<sup>1,2,4</sup> Human death from wild

elephant attack though common in various parts of the world even frequent in several states of our country, reports on autopsy studies on this subject are scarce in the literature.

The aim of this study was to find out the typical injuries caused by the wild elephant attack and also to describe the circumstances when those incidents commonly occur. This study will help to suggest preventive strategies to be taken to protect the vulnerable population from the wild elephant attack and hence to save many valuable human lives.

## 2. Materials and methods

The present study was conducted in the department of Forensic and State Medicine, B.S Medical College, Bankura West Bengal, India during the period July 2007 to August 2010. A total of 14 cases of deaths due to elephant attacks were recorded during the said period. Details regarding the cases were obtained from the inquest report, interviewing the eyewitnesses and the family members. Standard autopsy procedure was followed for examination of the injuries. The data so obtained was analyzed and presented in the study.

## 3. Observations

All the victims were from the rural areas and belonged to the low socioeconomic group.

The age of the deceased were between 30 and 65 years, with 11 of them being above 40 years. Males comprised 78.5% (11) of the

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victims. Majority of the incidences (12 cases) occurred between March and October, peak (8 cases) during the rainy season of July to September Fig. 1. Most of the attacks (12 cases) were noted in the early morning hours between 4 AM and 6 AM.

In all the cases the aggressors were lone tusker bull elephants and the attacks were sudden and unprovoked. Most of the incidences (11) occurred close to the human dwelling in forest areas while in two cases the individuals were passing along a lonely forest path. In one case the attack occurred while the person was working in the field.

The injuries, mostly in the form of abrasions, bruises, punctured lacerations, were noted on the bodies of all victims and were found to be much more extensive on the young male victims. Tusk injury was found in a single case. It comprised of a lacerated penetrating injury on the left side of the face fracturing the orbital roof and lacerating the frontal lobe of the brain Fig. 2. Another perforating lacerated tusk injury was noted on the left lateral side of the chest directed upwards, forwards and medially to left upper anterior chest tearing the apical pleura and fracturing the 1st and 2nd ribs Figs. 3 and 4.

Evidence of trampling injuries was noted in all the cases with the chest being the site of trampling in 12 cases and the head being crushed in two cases. Head trampling resulted in side to side crushing of the skull Fig. 5 with bursting fracture of the skull and laceration of the brain. Evidence of chest trampling was noted on the anterior chest wall with multiple rib fractures. Subconjunctival hemorrhage was noted in 3 cases and ear bleeding was found in a single victim. In all the cases death was due to the effects of trampling. In one case fatal penetrating tusk injuries was noted. Except in two cases all deaths occurred at the site of incidence.

#### 4. Discussion

Indian elephants are intelligent, social animal. They grow up to an adult by 16–20 years of age with average life period of 60–70 years. Adult bulls generally in the age of 20–50 years, show a typical annual physiological change which lasts for about a month known as 'MUSTH' when bulls become restless, violent and aggressive.

It is a common sight in this region that during winter a large herd of 20–30 elephants with 5–6 tuskers and some calves gently and harmlessly crossing villages without showing any aggression toward villagers. Elephants in the herd may become violent and aggressive when they are either injured or excessively irritated by the villagers<sup>5</sup> sometimes if they apprehend dangers to their calves.

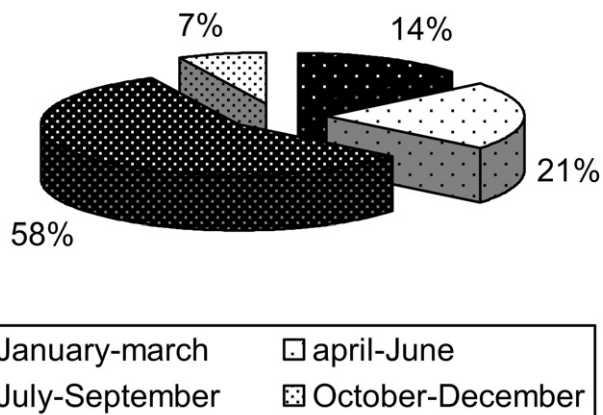


Fig. 1. Wild elephant attack-seasonal variation.



Fig. 2. Penetrating tusk injury on face.

Every year approximately 300 human fatalities occur due to elephant attacks in India.<sup>6</sup>

In our study maximum casualties occurred in the pre winter season, highest in the period of July to September. Reports in various newspapers<sup>7</sup> also suggest that high number of human death occurs in the month of April to August due to sudden unprovoked attacks by the lone tuskers. This is also the period considered to be the mating season of elephants in this region, when many adult bulls are in their musth state.<sup>8</sup> During this musth phase tuskers become violent and aggressive toward all other animals even to its own kind.<sup>9</sup> In one reported incidence of extreme passion a beaten bull in musth gored to death a cow elephant which it lost to other bull.<sup>10</sup>

Sometimes injury or disease may provoke elephant to attack human, as reported in one case in South Africa where killer wild elephant had disease in its tusk.<sup>2</sup> In our observation no such case could be found. Our study zone is inhabited by fairly good number of tribal population who by generations lives in the forest area and thrives mainly on forest products. Naturally they are more close and exposed to wild elephant conflict and that is why good number of victims of wild elephant attack belongs to tribal community.

In this region poor people prefer a little bushy lonely area near their dwelling places to attend nature call in the early morning and that is probably one of the reasons of elephants attack at morning. Farmers and laborers are mostly males and often go alone in the forest path or work in a small piece of agricultural land near forest in the early morning or late afternoon when



Fig. 3. Abrasion about the margins denotes entrance wound of perforating tusk injury.





**Fig. 4.** Apical portion of left lung visible through exit wound of tusk injury.



**Fig. 5.** Flattening of head by pressure of elephant foot.



**Fig. 6.** Elephant nail mark on front of chest.

incidents commonly take place and that may also be the reason for high number of male victims.

In an attempt to kill, elephants usually first grab the victim with their trunk and then crush them by putting under pressure of their foot. Sometimes they throw them from high lifting position on the ground followed by trampling. Younger male victims struggled more to escape from the trampling attempt and therefore sustained more extensive injuries. Females and older men are less likely to put up much resistance.

Bulls could use their tusk as lethal weapon to kill elephants or large animals but cannot confidently use that to kill human, probably they are lacking precision for targeting vital organs of smaller creatures like human with that huge tusk.

Nature of chest injuries, elephant nail marks [Fig. 6](#) on the pre-cordial area of chest suggest that in 12 cases death were due to trampling on the front of chest even though one victim was inflicted with fatal tusk injury. In two cases where head were crushed, no further attempt was made for trampling on the chest indicating that elephants were confident of death of targets following crushing of head.

From character of injuries inflicted upon the victims and distinguished pattern of trampling attempts on the target it can be inferred that elephants have fairly clear instinctual sense about the vital organs of human body.

## 5. Conclusion

People of low socioeconomic group living in adjacent forest areas are vulnerable to wild elephant attack and they should be extra careful and vigilant at dawn and late afternoon particularly during summer season considered to be the mating season of elephant in this region. All sudden, unprovoked attacks by the lonely tuskers in mating season indicate the aggressive behavior of elephants in musth. It appears that males and elderly subjects are more common victims. Elephants have strong instinctual knowledge of human vital organs and they do kill human by trampling either over front of chest

or on the head. In spite of having long and heavy pair of tusks elephant does not kill human by using those.

#### *Conflict of interest statement*

There is no conflict of interest.

#### *Ethical approval*

Necessary Ethical approval is obtained from Institutional Ethical Committee.

#### *Funding*

None

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